State of California
The Resources Agency
DEPARTMENT OF WATER RESOURCES
Northern District

RECREATION USE SURVEY OF INDIAN CREEK, PLUMAS COUNTY 1978

Technical Information Report No. 79-1

Prepared under the supervision of
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by

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This report was prepared to summarize information collected under WO 1600-4268 as part of an evaluation of a proposed reoperation of Antelope Reservoir, an element of the Department's Instream Water Use Program. Although this report was reviewed by appropriate individuals in the Department and other agencies, it is intended for internal use and should be considered preliminary and subject to revision.

June 1979

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SUMMARY

A field survey was made in 1978 of streamside recreation along Indian Creek, Plumas County. The survey began a three-year program to estimate the amount and types of recreation with augmented flow conditions. The random sample survey was taken at distinct stream reaches and during different use periods. Roving use counts were combined with interviews of recreationists to gather information which included activity, length of stay, visitor origin, and other data. A concurrent creel census determined angler success.

An estimated 63,000 hours of recreation use (40,000 recreation days) occurred between April 29 and November 15, 1978. The most frequently observed activities were camping, just relaxing, fishing and swimming and/or beach use. Sixty-two percent of the fishing occurred on the first 18 km (11 miles) of stream below Antelope Dam. About 27 percent of the visitors lived in Plumas County, 53 percent said Indian Creek was their primary destination, and 57 percent stayed overnight in the area. Results obtained from the 482 parties interviewed were comparable with data from the use counts.

An estimated 5,960 trout were caught in 11,250 hours of fishing on the creek. Over 2,000 crayfish and 180 fish of other species were also taken. About 82 percent of the trout were caught in the first 18 km (11 miles) below Antelope Dam.

INTRODUCTION

The Northern District, Department of Water Resources, conducted a recreation survey and creel census on Indian Creek, Plumas County, from April 29 to November 15, 1978. This was the first year of a three-year study to determine the influence of augmented flow releases on streamside recreation.

Indian Creek below Antelope Dam offers an opportunity to implement the DWR water management policy, adopted in 1975, which states, "Instream uses for recreation, fish, wildlife, and related purposes shall be balanced with other uses." When Antelope Dam began operation in 1964, streamflows in Indian Creek below the dam were stabilized. Minimum flows were increased from about 0.08 m^3/s (3 cfs) to 0.28 m^3/s (10 cfs) with roughly five-fold increases in trout habitat and populations (Gerstung, 1973). Presumably, fishing and related recreation on the creek were likewise enhanced. Further flow increases to 0.57 m^3/s (20 cfs) would result in an additional doubling of trout habitat (Hinton, 1977).

On a trial basis, Antelope Reservoir was reoperated in 1978 to increase flows in the creek in an effort to enhance recreation and fishery values without significant detriment to lake recreation.

Streamflow releases were 0.57 m^3/s (20 cfs) or more during the 1978 study period and the effects on recreation were monitored.

DESCRIPTION OF STUDY AREA

Indian Creek is a major tributary of the East Branch of the North Fork Feather River in Plumas County. This scenic area was once occupied by Maidu Indians. It has a rich history of gold mining, ranching, and lumber production. In recent decades, recreation use has increased rapidly with water a major attraction. Employment today is divided among services, government, logging, and lumber manufacturing. Ranches operate in Indian and Genesee Valleys.

The 1978 study area included Indian Creek from its mouth upstream to Antelope Dam (Figure 1). The study area was divided into five stream sections: Upper Indian Creek from the dam to Flournoy Bridge; Indian Creek in the Genesee Valley area from Flournoy Bridge to Taylorsville Park; Taylorsville Park and vicinity, including the campground, picnic area, and nearby creek; Indian Creek in Indian Valley between Taylorsville Park and Arlington Bridge; and Lower Indian Creek, downstream from Arlington Bridge to the mouth. Appendix I describes the survey reaches in detail.

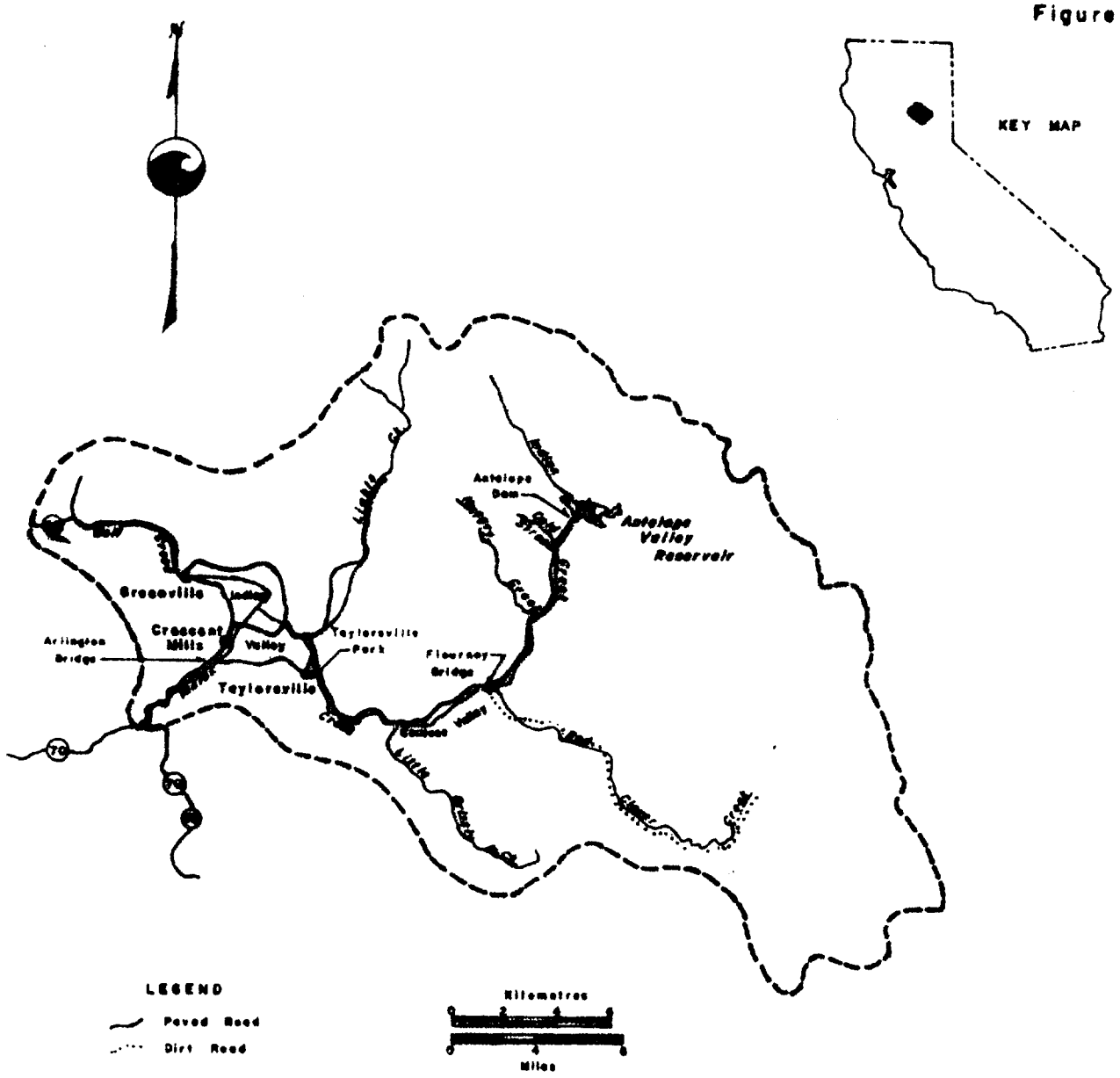
METHODS

Recreation Use Counts

Use counts were made on randomly selected dates within eight survey strata using the optimum allocation method described by Abrahamson and Tolladay (1959). Thirty-one days of the 201-day study period from April 29 through November 15, 1978, were surveyed: both days of the opening weekend, 3 of 10 holidays, 16 of 139 weekdays, and 10 of 50 weekend-days. Five one-hour counts of recreation use were made in the study area each day at regular periods, scheduled according to the number of daylight hours (Appendix II).

The surveys were made from a vehicle or on foot, as necessary, to check access and recreation sites. Recreationists and their vehicles were counted and recorded by the recreational activities with which they were associated. Observations were recorded by activity and stream section (Appendix III). The five daily counts were totalled and multiplied by factors that accounted for recreation use in the daylight periods not counted. Similarly, the resulting daily figures were expanded to estimate total recreation hours for all days in each stratum. Adding the stratum

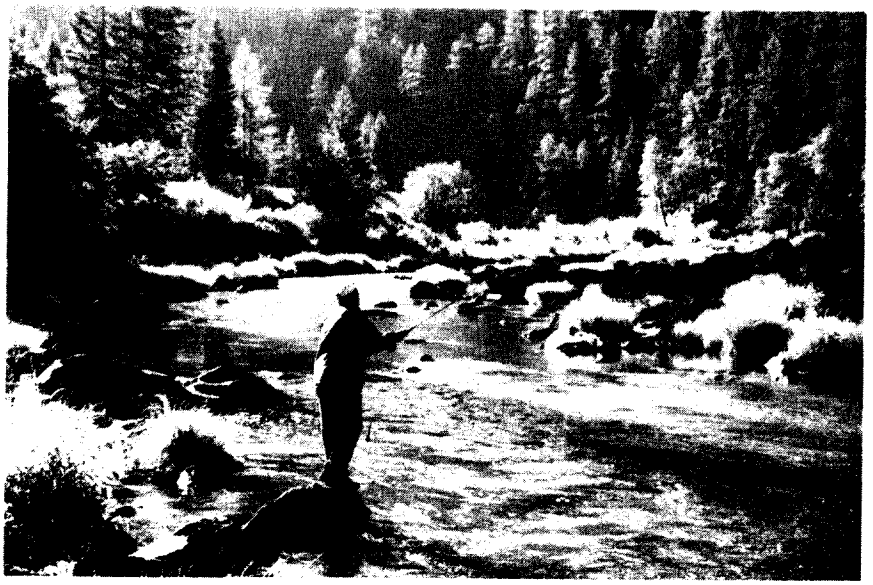
Figure 1

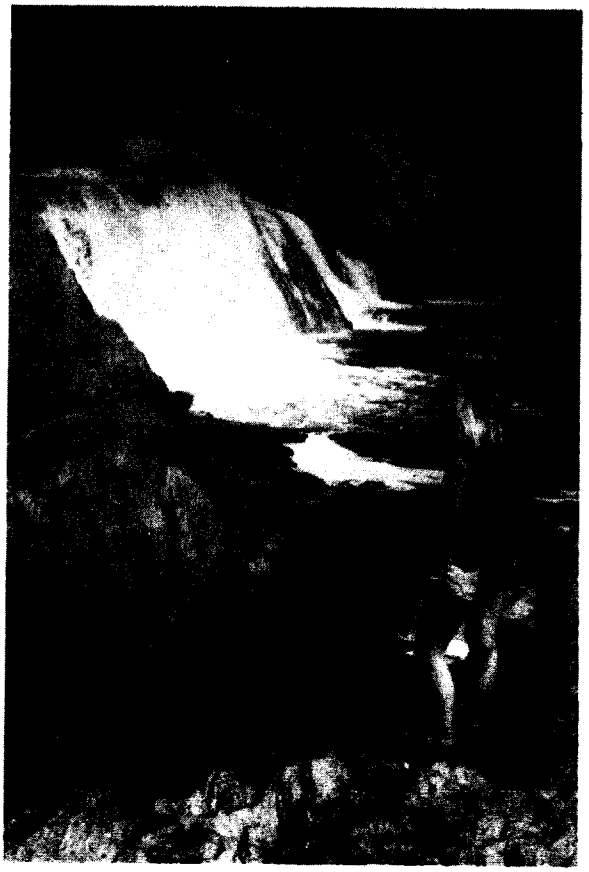


Indian Creek Recreation Survey and Creel Census 1978

Above: Diverse activities at Taylorsville Park.

Right: Catching trout in Genesee Valley

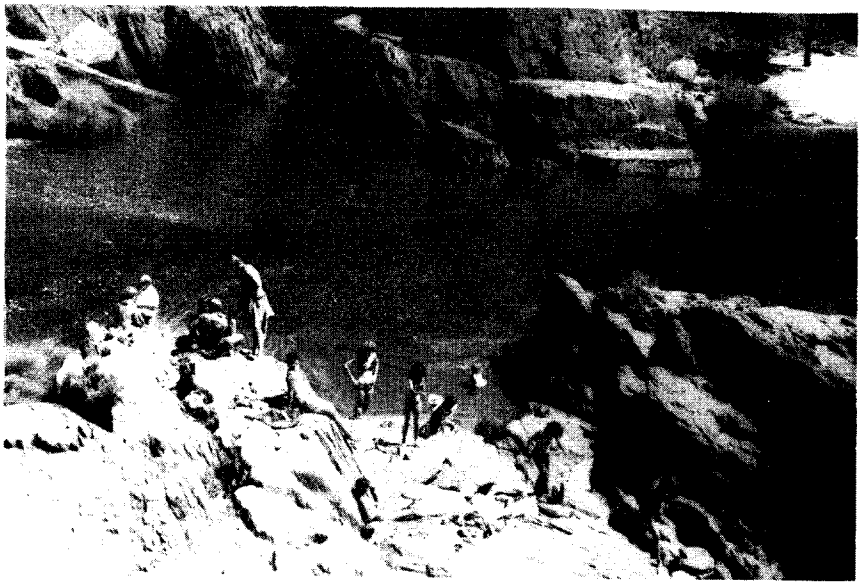




Above: Autumn trout fishing on lower Indian Creek.

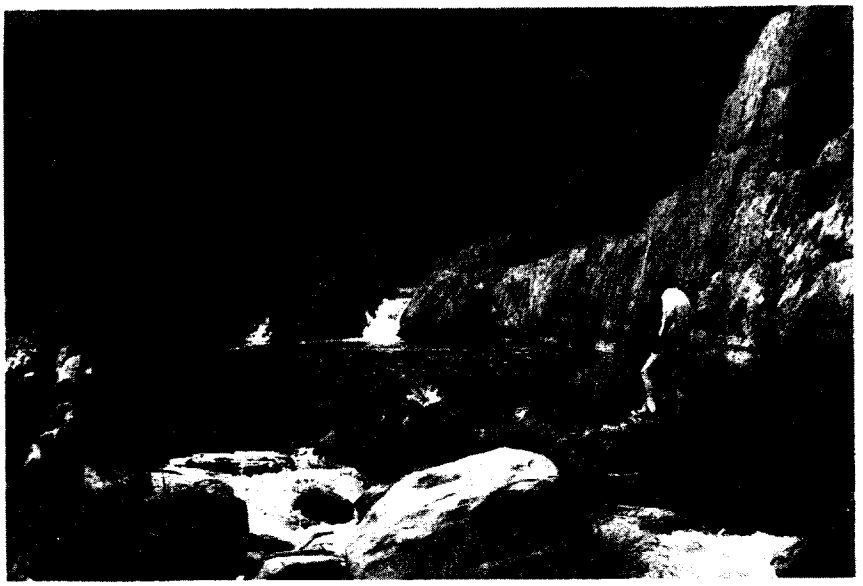
Right: Sightseeing at Indian Falls.

Swimming and beach use at Indian Falls



Trout fishing on Indian Creek near Cold Stream

A scenic side channel on lower Indian Creek.



totals provided an estimate of recreation hours for the study period. To estimate total recreation days, the total recreation hours were divided by weighted average length of stay.

Interviews

Recreationists on Indian Creek were contacted during and between use counts. The interviewer attempted to cover a cross-section of activities in as random a manner as possible. Interview effort was distributed approximately in proportion to density of use. When use was low, most of the parties were interviewed, but during peak periods this was impossible. The information gathered from each party included location of residence, people per vehicle, recreation activities, overnight accommodations, and length of stay (Appendix IV).

Creel Census

Anglers along Indian Creek were contacted on the 31 recreation survey days and 16 additional days to determine fishing success. Each angler was asked for county of residence and length of time spent fishing so far that day. Fish caught were counted, measured (fork length to nearest 0.5 cm--0.2 inch), and identified as to species. Crayfish were counted but not measured. The roving census clerks attempted to contact as many fishermen as possible on each day, with extra effort on Upper Indian Creek. After June 18, one surveyor conducted the creel census as well as use counts and interviews.

To determine total catch, the catch per hour was multiplied by estimated hours of fishing. Total weight of trout caught was calculated from estimated catch and length-weight data from Indian Creek (Brown, 1979).

Water Samples

Water samples were taken on survey days at several locations on Indian Creek. Water and air temperatures were recorded and the samples tested later for pH, turbidity, and electrical conductivity.

RESULTS

Recreation Use

Total recreation use on Indian Creek was estimated at 63,000 recreation hours (± 16,000 hours) for the period April 29 to November 15, 1978. Total recreation hours divided by weighted average length of stay indicates about 40,000 recreation days of use in 1978. A recreation hour is one hour of participation in any recreation activity by one person; a recreation day is participation by one person for all or part of a day.

Overall, camping was the major activity, followed by just relaxing, fishing, and swimming and/or beach use. Upper Indian Creek, Lower Indian Creek, and Taylorsville Park received nearly equal amounts of use and accounted for 86 percent of the total use (Table 1).

Interview Data and Visitor Characteristics

There were 482 parties interviewed in 1978, representing 1,448 persons and 512 vehicles. The mean number of people per party was 3.0, and the mean number of people per vehicle was 2.8. Almost 45 percent of the parties had 2 people. The mean length of day-use visits was 2.8 hours, with 36 percent of day visitors staying an hour or less. Overnight stays averaged 4.6 days; about 68 percent of overnight stays were either 2 or 3 days (1 or 2 nights) (Appendix V).

About 48 percent of visitors said they would fish. The second most popular activity was just relaxing (41 percent), followed by swimming and wading (21 percent), and beach use (14 percent), which is usually related to swimming but was a separate category in our interviews (Table 2). The percentages add up to more than 100 because many of the visitors participated in more than one activity.

About 45 percent of the visitors interviewed were at Indian Creek for day use only, 28 percent stayed overnight somewhere in the general area and visited Indian Creek for day use, and 27 percent camped overnight along the creek. Of the day visitors, 38 percent came to the creek as a primary destination, 23 percent were stopping on the way to someplace else, and 39 percent were staying in the general area. Of those staying overnight in the study area, 89 percent said it was their destination and 11 percent said they were stopping en route elsewhere.

TABLE 1

RECREATION HOURS BY ACTIVITY AND SURVEY AREA

Activity	Upper Indian Creek	Genesee Valley	Taylorsville Park	Indian Valley	Lower Indian Creek	Total Recreation Hours	Percent of Total
Fishing	7,000	1,400	300	150	3,200	12,050	19
Camping	5,600	2,800	6,200	-	1,350	15,950	26
Relaxing	4,200	1,500	5,800	-	2,200	13,700	22
Swimming and Beach Use	200	1,500	1,400	-	6,500	9,600	15
Sightseeing	500	100	100	-	1,300	2,100	3
Gold Seeking	300	-	-	100	1,800	2,100	3
Picnicking	300	50	900	-	800	2,050	3
Walking for Pleasure	200	450	600	-	400	1,650	3
Riding	-	200	800	100	100	1,200	2
Miscellaneous/Other 1/	300	300	1,300	100	600	2,600	4
Total Recreation Hours	18,600	8,300	17,400	450	18,250	63,000	100%

1/ Includes shooting, rafting, berry picking, and miscellaneous activities. Rodeo attendance at Taylorsville Park is not included in these figures.

TABLE 2

PERCENT OF PEOPLE PARTICIPATING
IN EACH RECREATION ACTIVITY,
FROM INTERVIEW DATA

Activity	Percent of People Participating
Fishing and bait [1]	48
Relaxing	41
Camping	29
Swimming and wading	21
Beach use	14
Picnicking	12
Sightseeing	8
Walking for pleasure	7
Playing	2
Boating	1
Gold seeking	1
Motorcycling	1
Rock hunting	1
Bicycling	1
Other/miscellaneous [2]	6
Totals [3]	193

1/ Includes crayfishing and bait gathering.

2/ Includes attending rodeo, square dancing, berry picking, shooting, photography, bird watching, floral study, mushroom hunting, and looking for arrowheads.

3/ Total number of people in the 482 parties interviewed was 1,448. The percentages add up to more than 100 because many people participated in more than one activity.

About 44 percent of the overnight visitors camped in undeveloped areas along the creek. Almost 36 percent camped at public campgrounds or parks. Ten percent stayed with friends or relatives in the area and the remainder stayed at motels, resorts, summer homes, or private campgrounds in the general area (Appendix V).

Modes of overnight accommodations, in order of frequency, were: pickup campers (25 percent of overnight parties); sleeping out or in car (24 percent); travel trailers (19 percent); tents (18 percent), motor home, van, or bus (12 percent); and tent trailer (2 percent of parties).

About 27 percent of the recreationists interviewed came from Plumas County. The next highest counties of origin were Butte (10 percent) and Lassen (8 percent). The combined counties of the San Francisco Bay area accounted for 24 percent. About 7 percent of the people interviewed were from out of state, mostly the Reno-Tahoe area of Nevada (Figure 2).

Creel Census Data and Angler Success

Over 1,000 anglers were contacted during the survey. They had fished about 1,726 hours during the 1978 trout season, with a recorded catch of 487 brown trout (Salmo trutta), 308 rainbow trout (Salmo gairdnerii), and 12 other fish. Total angling use was estimated at 11,250 hours (± 1,600 hours) with an estimated catch of 5,960 trout and 180 other fish (Table 3).

TABLE 3

SUMMARY OF ANGLER SUCCESS AND ESTIMATES OF FISH CAUGHT BY SURVEY AREA

Survey Area	Estimated Recreation Hours Fishing	Rainbow Trout Catch Per Hour	Rainbow Trout Est. Catch	Brown Trout Catch Per Hour	Brown Trout Est. Catch	Other Fish[1/] Catch Per Hour	Other Fish[1/] Est. Catch	All Fish Catch Per Hour	All Fish Est. Catch
Upper Indian Creek	7,000	.200	1,400	.495	3,465	.004	25	.699	4,890
Genesee Valley	1,400	.172	240	.012	15	.030	45	.214	300
Taylorsville Park	315	.143	45	0	0	0	0	.143	45
Indian Valley	150	.033	5	.303	45	0	0	.336	50
Lower Indian Creek	2,385	.185	440	.127	305	.047	110	.359	855
Totals	11,250	.189	2,130	.340	3,830	.016	180	.545	6,140

1/ Includes Sacramento squawfish (Ptychocheilus grandis), brown bullhead (Ictalurus nebulosus), and carp (Cyprinus carpio). In addition, over 2,000 crayfish (probably Pacifastacus leniusculus) were caught from Lower Indian Creek in 800 hours of crayfishing.

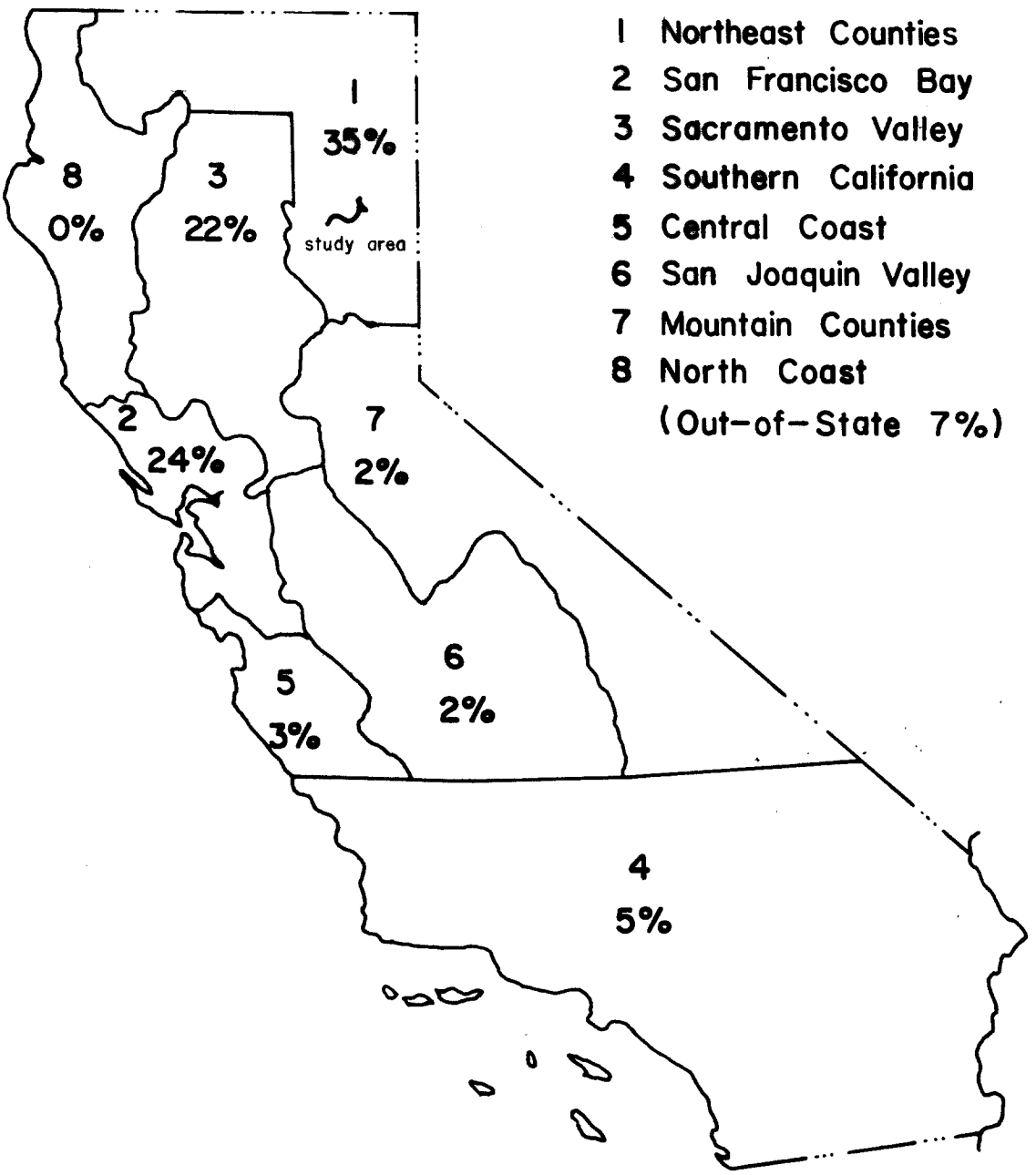


Figure 2

Origin of Indian Creek Visitors by County Groups-1978

Eighty-two percent of the trout were caught in Upper Indian Creek, which had 62 percent of the fishing use, and the best fishing with a catch of 0.70 trout per hour. The average success in all areas of the creek was 0.53 trout per angler hour.

The mean length of brown trout caught during 1978 was 22.9 cm (9.0 inches) with a range of 15.5 to 53 cm (6.1 to 21 inches) (Appendix VI). The mean length of rainbow trout was 26.5 cm (10.4 inches) with a range of 15 to 43 cm (5.9 to 17 inches). The length frequency distribution of rainbow trout caught in Indian Creek had two distinct modes: 30-32 cm (11.8-12.6 inch) fish, most of which probably washed over the spillway of Antelope Dam during its spring overflow, and 19-22 cm (7.5-8.7 inch) fish already in the creek (Appendix VII). An estimated 530 kg (1,165 pounds) of brown trout and 385 kg (850 pounds) of rainbow trout were caught. In addition, at least 2,000 crayfish were caught in Lower Indian Creek in about 800 hours of crayfishing.

Indian Creek angler origin was similar to the origin of general recreationists determined from other interviews; 34 percent of the fishermen came from northeastern counties (Figure 3).

Water Quality and Weather Data

Water quality varied by stream area and time. Daily maximum stream temperatures ranged from 5.5° C (42° F) to 29° C (84° F) over the length of the creek, with temperatures lowest below Antelope Dam and highest on Lower Indian Creek. Turbidity was low to negligible. The stream cleared gradually over the season and ranged from 10 ppm at the mouth in April to 0.8 ppm in Genesee Valley in November. The pH index ranged from 6.8 to 9.3, and generally indicated slightly alkaline water. Detailed water quality data are available from the Northern District, Department of Water Resources.

The weather during the survey was typically moderate. Daily air temperatures ranged from a low of 2° C (36° F) in April to a high of 37° C (99° F) in August. Rain fell on two survey days. Wind was common during the afternoons.

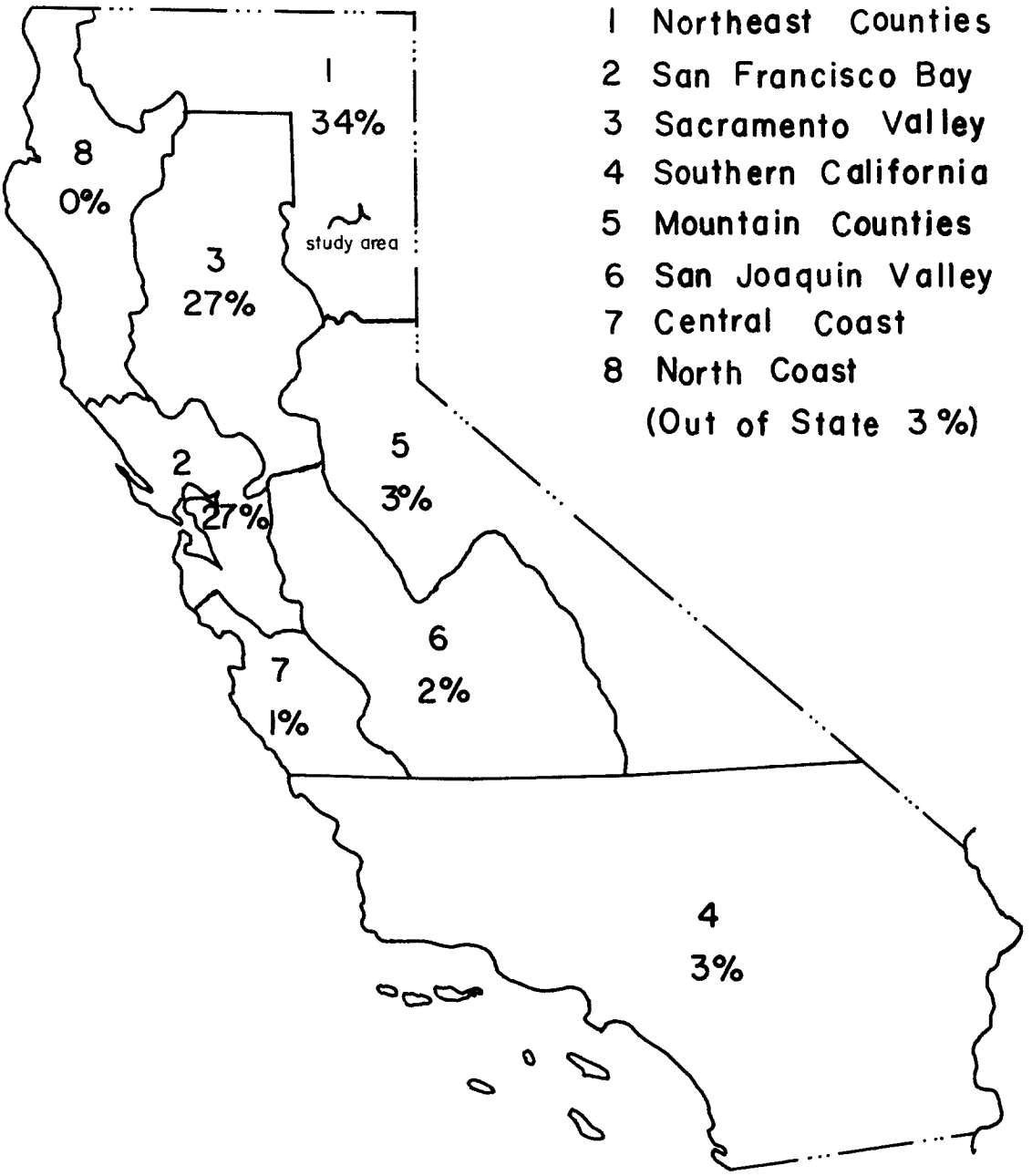


Figure 3.

Indian Creek Angler Origin by County Groups, 1978

DISCUSSION

Understanding the limitations of the recreation use survey and interviews helps put the data obtained in perspective. This section describes constraints and compares results obtained from use counts, interviews, and the creel census. Together, the counts and interviews provide a good picture of total use and activities. The creel census data show angler success.

Limitations of Use Counts

Most recreationists on the creeks were readily observed during use counts, but accurate counts were difficult in certain areas of low visibility. Each survey reach except Taylorsville Park had such areas. The use counts did not accurately reflect certain activities such as sightseeing and hiking. These activities are better estimated by interviews.

Vehicle access points were checked on each count, but occasionally the people with the vehicles were not found. From counts of unassociated vehicles, it appears the estimate of total recreation use may be as much as 18 percent low. In good conditions and when use was very low, the counts were quite accurate. The total recreation use estimate of 63,000 recreation hours is more accurate than the estimates for each individual activity. The confidence interval of $\pm$ 25 percent indicates only the probable accuracy of expanding 31 days of counts to estimate use for the 201-day study period.

On July 2, during the rodeo at Taylorsville, 216 people were present in the rodeo grounds and 176 people were counted in the county park area. Those at the rodeo itself were not included in the recreation hour estimates, since it was a special event unrelated to the creek and not representative of the stratum. However, most visitors in the vicinity were there primarily for the rodeo, and some rodeo spectators and participants showed up in counts elsewhere along the creek that day.

Limitations of Interviews

Interview coverage was good. Approximately 17 percent of the estimated number of recreationists on the creeks were interviewed. Coverage varied on specific dates, from roughly 5 to 47 percent, with each stratum represented about equally.

Despite attempts to contact recreationists randomly, several sources of bias are possible. Bias may be introduced by conscious or unconscious selection of visitors in some recreation activities or having certain characteristics of age, race, or sex. Another source of bias is failure to cover all access points, as with private lands and residences along the creeks. Strict sampling methods were not used to obtain randomness in interviews.

Comparison of Use Counts and Interviews

Comparison of the distribution of use counts and interviews indicates the degree to which each is representative of the underlying population. The distribution of recreationists observed and interviews are reasonably close (Table 4). Extra interviews were made on Upper Indian Creek, while long-term campers at Taylorsville Park were not interviewed repeatedly. During peak use periods, it was impossible to interview recreationists at Taylorsville Park in the same proportion as they were interviewed elsewhere.

TABLE 4

DISTRIBUTION OF INTERVIEWS COMPARED TO DISTRIBUTION OF ESTIMATED USE

Survey Area	Upper Indian Creek	Genesee Valley	Taylorsville Park	Indian Valley	Lower Indian Creek	Total
Percent of interviews	39	14	12	1	34	100%
Percent of recreation use (recreation hours)	27	12	24	1	36	100%

Comparison of activities reported by recreationists with what we saw them doing also indicates a reasonably close correlation between the two samples (Table 5).

TABLE 5

ACTIVITY COMPOSITION FROM INTERVIEWS OF
RECREATIONISTS COMPARED TO USE COUNTS

Activity	Swimming & Beach Use	Picnicking and Relaxing	Fishing *	Sightseeing	Walking for Pleasure	Riding **	Misc./ Other	Total
Percent of interviews-- excludes camping	21	32	29	5	4	2	7	100%
Percent of recreation use (recreation hours)-- excludes camping	20	34	26	4	3	3	10	100%

*Including crayfishing and bait gathering
**Horse, bike, motorbike

The data indicate that the interviews probably over-represented fishing slightly and under-represented motorcycle, bicycle, and horseback riding. The differences are logical, due to the nature of the activities. Fishermen tend to be stationary and easy to interview; they were also sought out for creel census purposes. People walking are more readily interviewed than people riding motorbikes, bicycles, or horses.

Limitations of Creel Census

About 15 percent of the overall fishing use was represented in the creel census. The distribution of anglers censused was roughly similar to the distribution of estimated angler use (Table 6). Anglers on Upper Indian Creek were censused more often than those in other areas because the streamflow studies have focused on the upper creek. Also, anglers on Lower Indian Creek remained for shorter periods and were more difficult to contact.

TABLE 6

DISTRIBUTION OF ANGLERS CENSUSED
COMPARED TO DISTRIBUTION OF ANGLER USE

Survey Area	Upper Indian Creek	Genesee Valley	Taylorsville Park	Indian Valley	Lower Indian Creek	Total
Percent of Angler Hours Censused	79	9	1	1	10	100%
Percent of Angler Hours (from use counts)	62	13	3	1	21	100%

Slightly more than half of the rainbow trout caught in Indian Creek may have washed over the spillway of Antelope Dam in May and June. Antelope Dam began spilling on May 12. Flow over the spillway increased to 4.2 m^3/s (150 cfs) by May 16, then gradually decreased to zero by June 27. The conclusion that a large number of trout left the reservoir during that period is supported by several observations. First the length frequency of stream-caught rainbow trout included a predominant mode (30-32 cm--11.8-12.6 inches) which corresponded closely to the length frequency of trout caught in Antelope Lake. Second, large numbers of rainbow trout in this size range first appeared in the creek during mid-May when the lake spilled. Third, the general appearance (color, shape, and markings) of creek-caught rainbows this size was more like the lake fish than the typically smaller creek rainbows or occasional stream fish of the same size. In addition, some of the rainbow trout caught below the dam had abrasions and fin fraying, possibly sustained from the spillway or the boulders below. Finally, fishermen reported catching large rainbow trout from the lower end of the spillway during late May.

ACKNOWLEDGEMENTS

Much appreciation is due Student Assistant Emmett Cartier for his enthusiasm and willingness to work the long hours required to conduct this survey. Cartier summarized most of the data and prepared the report.

Student Assistants Sharon Haines and Jesse Purvis helped with the creel census and data analysis. Thanks are also due Fish and Wildlife Seasonal Aides Vern Clements, Nancy Swirhun, Yvonne Gentry, and Diana Gentry for their work on the creel census.

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APPENDIX I

DESCRIPTION OF SURVEY REACHES

The six survey areas differ notably in characteristics of water quality, topography, vegetation, facilities available, access, and land ownership. Following is an overview of each section.

Upper Indian Creek

The 18 km (11 miles) of creek below Antelope Dam were surveyed in 1978, but not in 1977 because the access road was closed for reconstruction. In 1978, the road was paved with wide pullouts for convenient creek access. The creek flows through a granite canyon timbered with pine and fir. Parts of the canyon floor are meadowlike, especially at the upper ends of the reach. Elevation ranges from 1 500 m (4,900 feet) at the dam to 1 100 m (3,700 feet) at Flournoy Bridge. All but the lower 1.6 km (1 mile) of stream is within Plumas National Forest. During 1978, water releases were controlled at about 0.56 m^3/s (20 cfs) during the survey. The stream remains cold in summer due to deep-water outflow from the dam and is usually slightly turbid. Abundant brown trout and a few rainbow trout comprise the fishery. Some rainbow trout enter the creek from Antelope Lake when it spills. Sacramento squawfish and brown bullhead also occur in the lowermost portion, where the creek enters Genesee Valley.

Indian Creek in Genesee Valley

The creek gradient is slight in the long valley from Flournoy Bridge to Taylorsville Park. Above Little Grizzly Creek, Indian Creek flows through private ranchlands closed to trespass. Below there, the creek flows through short sections of National Forest and private ownerships. Black oak, ponderosa pine, and Douglas fir predominate. The paved county road occasionally comes within sight of the creek. There are no developed recreation facilities in this reach. Important public access points are at Flournoy Bridge and a large wooded flat approximately midway in the 18-km (11-mile) reach. A dirt road leads across the flat to the creek at secluded points. The stream is characteristically clear and cool. Summer low flows average 0.8 m^3/s (30 cfs) at Flournoy Bridge and 1.1 m^3/s (40 cfs)

above Taylorsville. This reach has good fishing at times for rainbow trout, Sacramento squawfish, suckers, and a few brown trout.

Taylorsville Park and Campground Area

The picnic, camping, and rodeo facilities maintained by Plumas County just outside Taylorsville are the only developed recreation facilities on the creek. Indian Creek is easily accessible in the 0.4-km (0.25-mile) section adjacent to the picnic area. The campground and rodeo arena are on the other corners of a three-way intersection. Tall ponderosa pine shade the picnic area; oak, pine, and Douglas fir shelter the campground. There are seven picnic sites plus a group barbecue area, restrooms, horseshoe pits, piped water in the picnic area, and eight campsites in the campground. Rainbow trout are occasionally caught in this reach; other species common to Indian Valley are probably also present. Mill Race Ditch, the major water diversion for Indian Valley, normally removes up to 1.2 m^3/s (42 cfs) from the creek about 1.6 km (1 mile) above Taylorsville. However, releases from storage at Antelope Lake remain in the creek.

Indian Creek in Indian Valley

In broad, level Indian Valley, the creek flows through fenced pastures and meadows in private ownership. Most of the stream is far from any roads, but three secondary road bridges cross it. Difficult access is available at the bridges and from the road near the mouth of Lights Creek. Significant amounts of water are diverted for irrigation, some being returned to the creek before it leaves the valley. About a fourth of the 14 km (9 miles) of creek in Indian Valley have been channelized. This reach has Sacramento squawfish, suckers, carp, rainbow trout, and brown trout, but fishing is generally poor.

Lower Indian Creek

The lower 7 miles of Indian Creek drop in elevation from 1 100 m (3,500 feet) at Arlington Bridge to 900 m (3,000 feet) at the mouth. The rugged canyon is scenic and well wooded with oaks, pine, and Douglas fir. State Highway 89 follows the right bank of the creek; Western Pacific Railroad crosses the creek about 1.6 km (1 mile) below Arlington Bridge,

and is high above the left bank at the mouth. Recreation access is available from pullouts and short spur roads off the highway at many points, but several sections of the creek are hidden from view. There are no developed recreation facilities. The varied stream channel offers small beaches, pools, rock outcroppings, and rapids. The water is normally somewhat turbid and foamy, which detracts from its aesthetic appeal. It becomes quite warm in summer. Average low flows below Crescent Mills are about 0.8 m^3/s (30 cfs). The fishery is made up primarily of rainbow and brown trout, with some Sacramento squawfish, suckers, carp, and brown bullhead. Crayfish are abundant in late summer. Fishing is fair in spring and fall.

APPENDIX II

1978 INDIAN CREEK RECREATION
USE COUNT SCHEDULE

Date	Daylight Hours	Use Counts Count	Use Counts Time	Creel Census Time (approx.)
April 29 PST	15½	1st	0630-0730	0800-1200
		2nd	0900-1000	1400-1800
		3rd	1200-1300	
		4th	1430-1530	
		5th	1730-1830	
April 30 DST	15½	1st	0730-0830	0800-1200
		2nd	1000-1100	1500-1900
		3rd	1300-1400	
		4th	1530-1630	
		5th	1830-1930	
May-August DST	16½	1st	0700-0800	0900-1300
		2nd	1000-1100	1600-2000
		3rd	1300-1400	
		4th	1600-1700	
		5th	1900-2000	
September DST	14	1st	0730-0830	0900-1300
		2nd	1000-1100	1400-1800
		3rd	1230-1330	
		4th	1500-1600	
		5th	1730-1830	
October DST	13	1st	0800-0900	0900-1300
		2nd	1000-1100	1400-1800
		3rd	1230-1330	
		4th	1500-1600	
		5th	1700-1800	
November PST	12	1st	0700-0800	0800-1200
		2nd	0900-1000	1300-1700
		3rd	1130-1230	
		4th	1400-1500	
		5th	1600-1700	

Due - 7

California Department of Water Resources

River Use Survey

ACTIVITY DISTRIBUTION COUNT

INDIAN CREEK (Plumas County)

DATE: DAY __ __ MONTH __ __ YEAR __ __

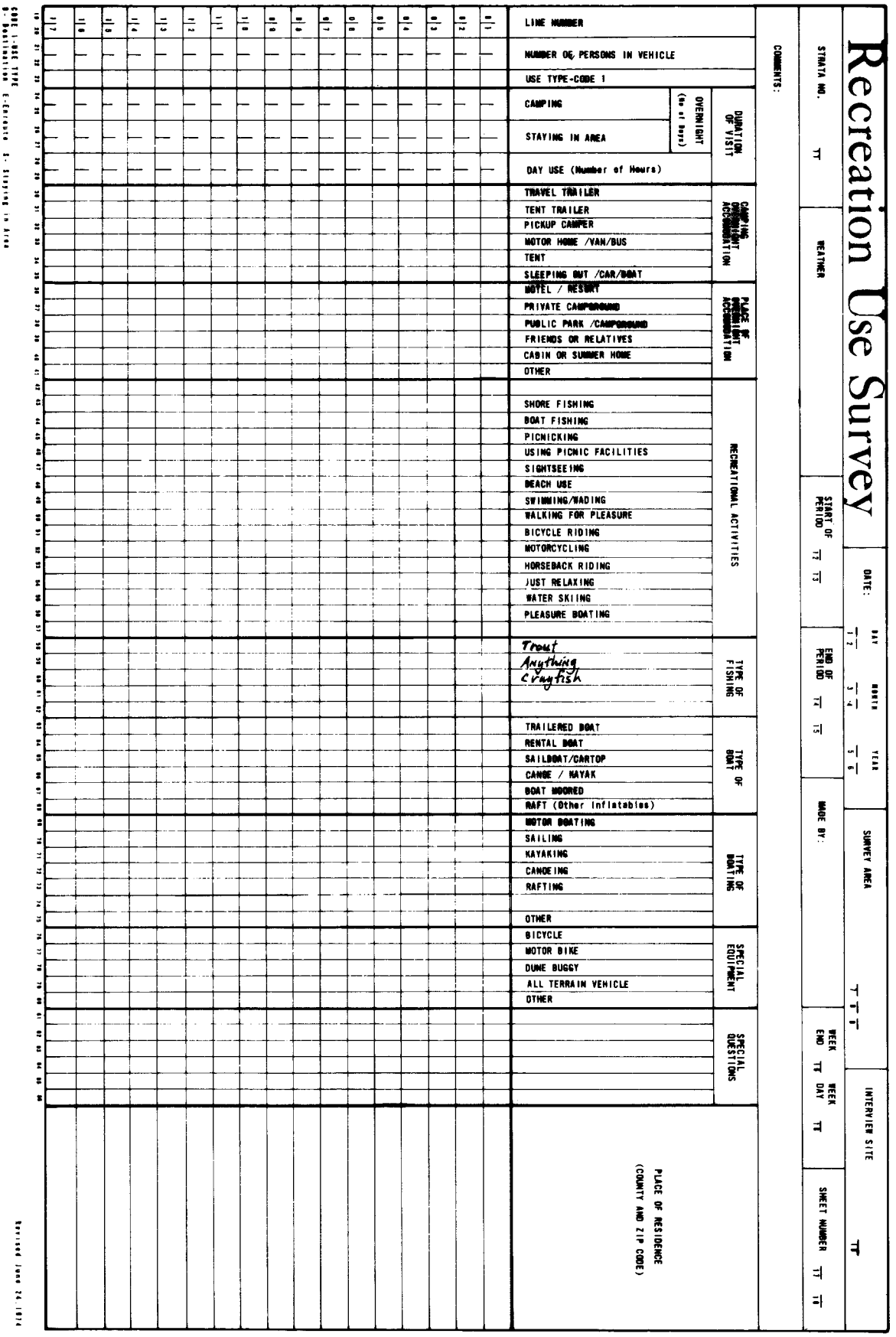
STRATA NO. —

SHEET NUMBER — — —

MADE BY:

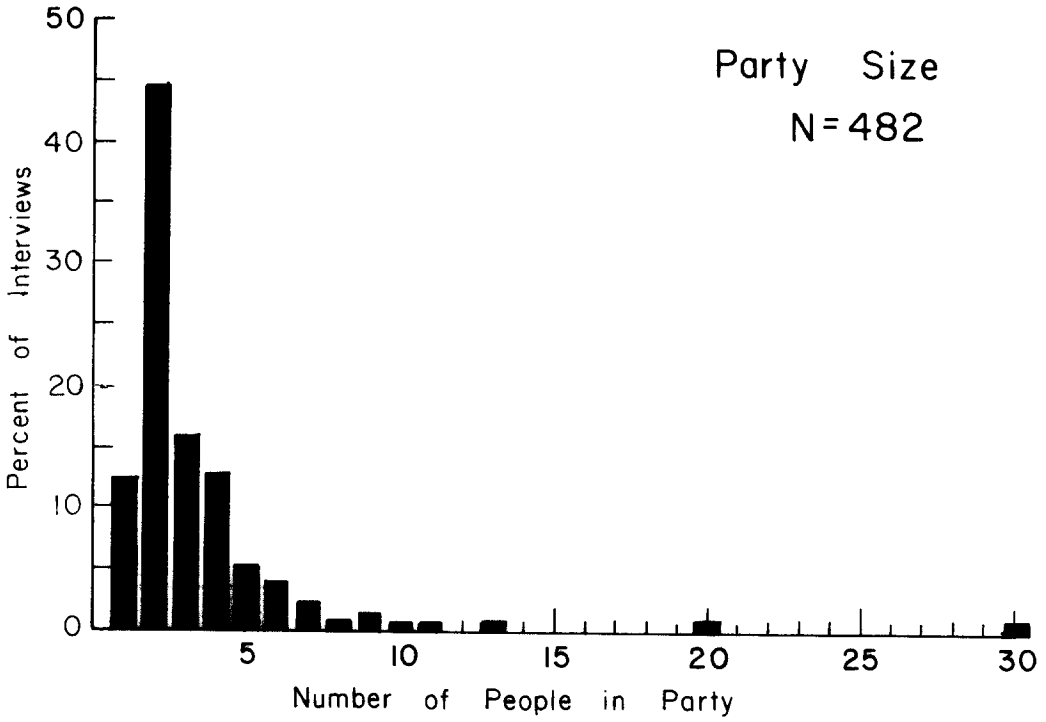
COMMENTS

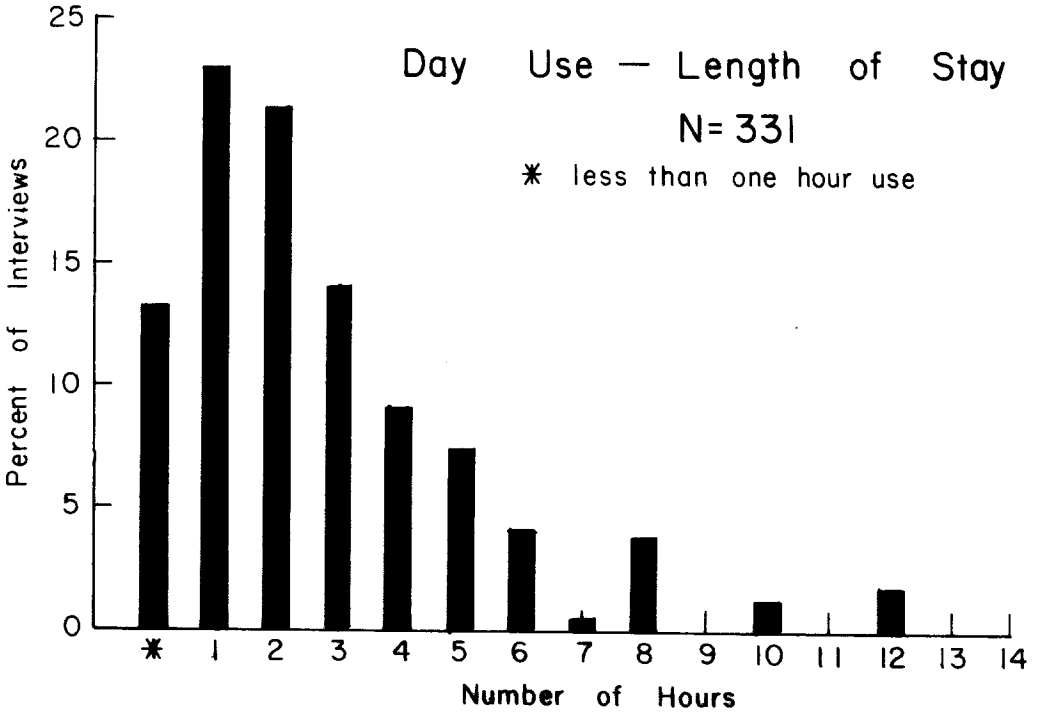
					SITE CHARACTERISTICS
					LOCATION- REACH
					TIME START
					TIME FINISH
					AIR TEMP.
					WEATHER
					WATER TEMP.
					FLOW C.F.S.
					APPEARANCE
					KAYAKING
					CANOEING
					RAFTING
					SHORE FISHING
					CRAY FISHING
					BEACH USE
					SWIMMING/WADING
					AQUATIC NATURE STUDY
					GOLD SEEKING
					SIGHTSEEING
					WALKING FOR PLEASURE
					BICYCLE RIDING
					MOTORCYCLING/ ORV
					HORSEBACK RIDING
					JUST RELAXING
					CAMPING
					USING CAMPING facilities
					USING PICNIC facilities
					PICNICKING
					PARTICIPATE IN OUTDOOR GAMES
					ATTD.EVENT play,sports
					CHILDREN PLAYING
					ATTD.INTERP.PROGRAM
					NATURE STUDY-FLORA
					BIRDWATCHING
					PHOTOGRAPHY/PAINTING
					TOTALS


Recreation Use Survey
STRATA NO.
WEATHER
START OF PERIOD
END OF PERIOD
DATE: DAY MONTH YEAR
MADE BY:
SURVEY AREA
INTERVIEW SITE
WEEK END
WEEK DAY
SHEET NUMBER
COMMENTS:
LINE NUMBER
NUMBER OF PERSONS IN VEHICLE
USE TYPE-CODE 1
DURATION OF VISIT
CAMPING
OVERNIGHT (No of Days)
STAYING IN AREA
DAY USE (Number of Hours)
CAMPING EQUIPMENT ACCOMMODATION
TRAVEL TRAILER
TENT TRAILER
PICKUP CAMPER
MOTOR HOME /VAN/BUS
TENT
SLEEPING OUT /CAR/BOAT
PLACE OF OVERNIGHT ACCOMMODATION
MOTEL / RESORT
PRIVATE CAMPGROUND
PUBLIC PARK /CAMPGROUND
FRIENDS OR RELATIVES
CABIN OR SUMMER HOME
OTHER
RECREATIONAL ACTIVITIES
SHORE FISHING
BOAT FISHING
PICNICKING
USING PICNIC FACILITIES
SIGHTSEEING
BEACH USE
SWIMMING/WADING
WALKING FOR PLEASURE
BICYCLE RIDING
MOTORCYCLING
HORSEBACK RIDING
JUST RELAXING
WATER SKIING
PLEASURE BOATING
TYPE OF FISHING
Trout
Anything
Crayfish
TYPE OF BOAT
TRAILERED BOAT
RENTAL BOAT
SAILBOAT/CARTOP
CANOE / KAYAK
BOAT MOORED
RAFT (Other Inflatables)
TYPE OF BOATING
MOTOR BOATING
SAILING
KAYAKING
CANOEING
RAFTING
OTHER
SPECIAL EQUIPMENT
BICYCLE
MOTOR BIKE
DUNE BUGGY
ALL TERRAIN VEHICLE
OTHER
SPECIAL QUESTIONS
PLACE OF RESIDENCE
(COUNTY AND ZIP CODE)
CODE 1-USE TYPE
D- Destination E-Enroute S- Staying in Area
Revised June 24 1974

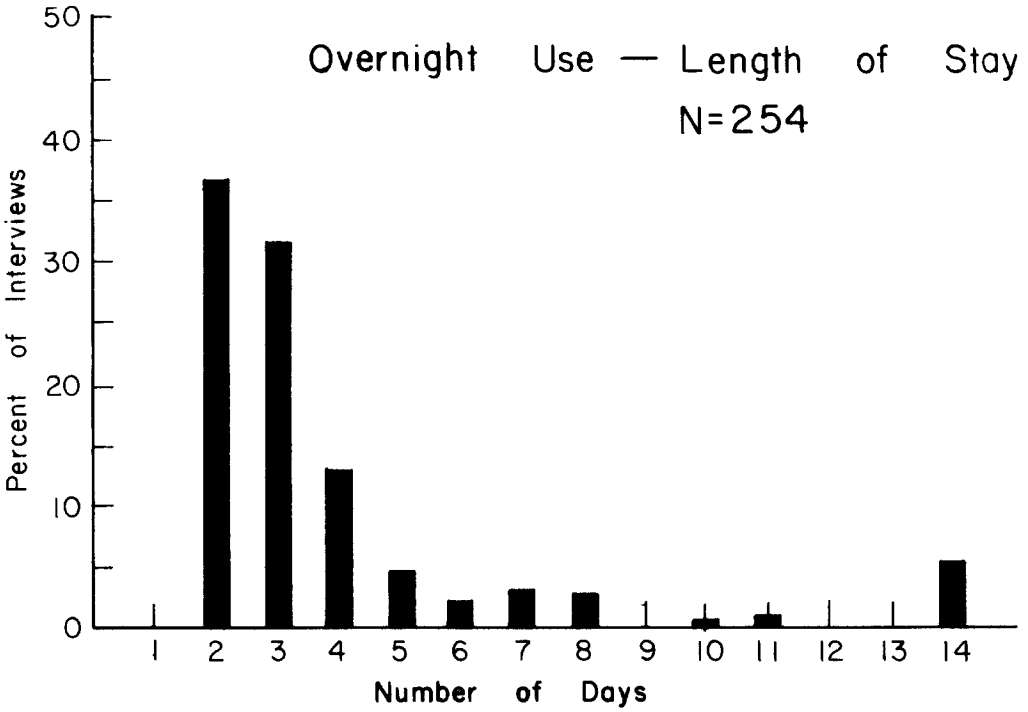
Appendix V

Visitor Characteristics — Indian Creek, 1978





Appendix V (continued)



Place of Overnight Accommodation

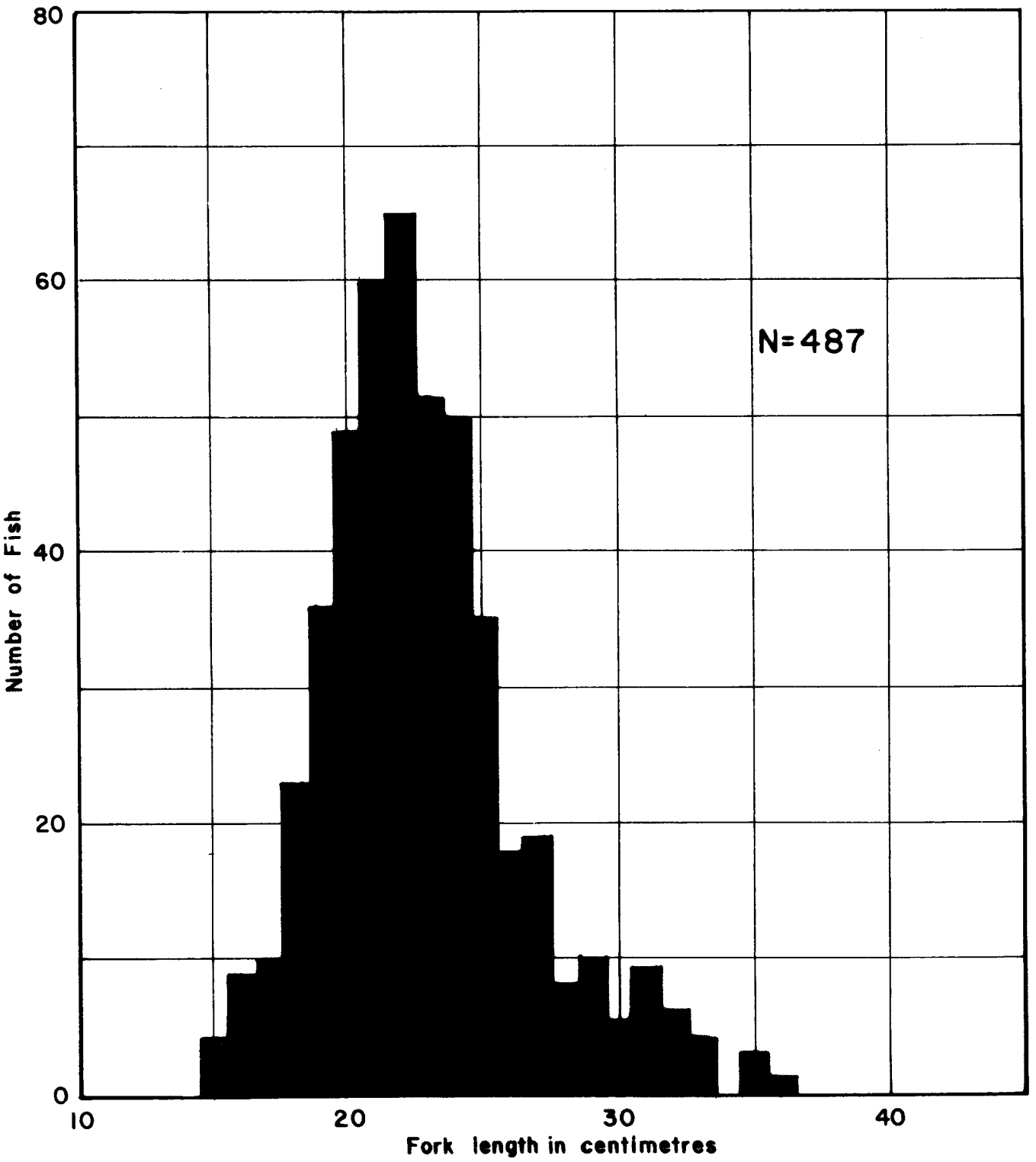
Type of Place	Percent of Interviews
Undeveloped Area	44
Public Campground / Park	36
Friends or Relatives	10
Cabin or Summer Home	4
Motel / Resort	4
Private Campground	2

Camping Accommodation

Type of Accommodation	Percent of Interviews
Pickup Camper	25
Sleeping Out	~~36~~ 24
Travel Trailer	19
Tent	18
Motorhome / Van	12
Tent Trailer	2

Appendix VI

Length Frequency of Censused Brown Trout
Indian Creek, 1978



Appendix VII

Length Frequency of Censused Rainbow Trout
Indian Creek, 1978